

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

## In Re Application of

Ursula Buchholz, Peter L. Collins, Brian R. Murphy, Stephen S. Whitehead,  
Christine D. Krempf

Serial No. 09/602,212

Group Art Unit: 1648

Filing Date: June 23, 2000

Examiner: S. Brown

For: PRODUCTION OF ATTENUATED, HUMAN-BOVINE CHIMERIC  
RESPIRATORY SYNCYTIAL VIRUS VACCINES

DATE OF DEPOSIT: 4/12/2002

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JEFFREY J. KING  
REGISTRATION NO. 38,515

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Commissioner for Patents  
Washington DC 20231

## POWER TO INSPECT AND MAKE COPIES

The undersigned hereby authorizes Wayne Croteau, Christina Mraz and  
Doreen Watson to inspect and make copies of the file history of the above-identified  
application.

Date: 4/12/2002

Jeffrey J. King  
Registration No. 38,515

Woodcock Washburn LLP  
One Liberty Place - 46th Floor  
Philadelphia PA 19103  
Telephone: (215) 568-3100  
Facsimile: (215) 568-3439

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Ursula Buchholz et al.

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Sir:

The undersigned attorney of record, pursuant to the provisions of 37 C.F.R. §§ 1.33 and 1.34, and M.P.E.P. §402.02, hereby appoints the registrants of Woodcock Washburn LLP, One Liberty Place, 46<sup>th</sup> Floor, Philadelphia, Pennsylvania 19103, telephone (215) 568-3100, as its agents and attorneys to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected herewith.

Done on this 11 day of MARCH, 2002, at Rockville, Maryland.UNITED STATES DEPARTMENT OF HEALTH  
AND HUMAN SERVICESBy: Jack SpiegelPrinted Name: JACK SPIEGELRegistration No.: 34,477for: Dr. Jack Spiegel, Director, DTDT  
Office of Technology Transfer  
National Institutes of Health  
6011 Executive Boulevard, Suite 325  
Rockville, MD 20852  
Telephone (301) 496-7056  
Facsimile (301) 402-0220

DHHS CASE NO.: E-178-99/1

55146-1

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

## In Re Application of:

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Washington, DC 20231

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ESTABLISHMENT OF RIGHT OF ASSIGNEE TO TAKE ACTION  
AND  
REVOCATION AND POWER OF ATTORNEY

Dear Sir:

The undersigned is empowered to act on behalf of the assignee below (the "Assignee"). The original assignment was recorded in the United States Patent and Trademark Office on September 12, 2000 at Reel 011148, Frames 0402-0405, and the Agreement was recorded on September 12, 2000 at Reel 011146, Frame 0201. A copy of the Assignment and the Agreement are attached. The Assignment and Agreement represent the entire chain of title of this invention from the Inventors Ursula Buchholz; Peter L. Collins; Brian R. Murphy; Stephen S. Whitehead; and Christine D. Krempel to the Assignee.

I declare that all statements made herein are true, and that all statements made upon information and belief are believed to be true, and further, that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that willful, false statements may jeopardize the validity of the application, or any patent issuing thereon.

The undersigned hereby revokes any previous powers of attorney in the subject application, and hereby appoints the below listed registrants of National Institutes of Health Offices of Technology Transfer, 6011 Executive Boulevard, Suite 325, Rockville, MD 20852, telephone (301) 496-7056, as its agents and attorneys with full power of substitution and revocation to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected herewith. This appointment is to be to the exclusion of the inventor(s) and his/her/their attorney(s) in accordance with the provisions of 37 C.F.R. § 3.71.

<u>James C. Haight</u>	Reg. No. <u>25,588</u>
<u>David R. Sadowski</u>	Reg. No. <u>32,808</u>
<u>Jack Spiegel</u>	Reg. No. <u>34,477</u>
<u>Susan S. Rucker</u>	Reg. No. <u>35,762</u>
<u>Stephen Finley</u>	Reg. No. <u>36,357</u>
<u>Steven Ferguson</u>	Reg. No. <u>38,488</u>
<u>John Peter Kim</u>	Reg. No. <u>38,514</u>
<u>Norbert Pontzer</u>	Reg. No. <u>40,777</u>
<u>Richard U. Rodriguez</u>	Reg. No. <u>45,980</u>
<u>Marlene Shinn</u>	Reg. No. <u>46,005</u>
<u>Dale Berkley</u>	Reg. No. <u>32,319</u>
<u>Catherine M. Joyce</u>	Reg. No. <u>40,668</u>

The National Institutes of Health Office of Technology Transfer has been duly delegated responsibility for such patent matters under the authority of the Department of Health and Human Services Secretary Louis W. Sullivan's May 21, 1991, memorandum appearing in the Friday, June 7, 1991, Federal Register Notices at Vol. 56, No. 110, pp. 26418-26419. The undersigned is authorized to exercise such authority in this matter.

Done on this 11 day of MARCH, 2002, at Rockville, Maryland.

UNITED STATES DEPARTMENT OF HEALTH  
AND HUMAN SERVICES

By: Jack Spiegel  
Printed Name: Jack Spiegel  
Registration No.: 34,477  
for: Dr. Jack Spiegel, Director OTDT  
Office of Technology Transfer  
National Institutes of Health  
6011 Executive Boulevard, Suite 325  
Rockville, MD 20852  
Telephone (301) 496-7056  
Facsimile (301) 402-0220

DHHS CASE NO. E-178-99/1



01580-398100US  
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PTAS

TOWNSEND AND TOWNSEND AND CREW LLP  
JEFFREY J. KING  
TWO EMBARCADERO CENTER  
8TH FLOOR  
SAN FRANCISCO, CA 94111-3834



\*101488536A\*

UNITED STATES PATENT AND TRADEMARK OFFICE  
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 09/12/2000

REEL/FRAME: 011146/0201  
NUMBER OF PAGES: 8

BRIEF: U.S. PUBLIC HEALTH SERVICE AGREEMENT

ASSIGNOR:

BUCHHOLZ, URSULA

DOC DATE: 09/28/1999

ASSIGNEE:

UNITED STATES PUBLIC HEALTH  
SERVICE, AS REPRESENTED BY THE  
OFFICE OF TECHNOLOGY TRANSFER,  
NATIONAL INSTITUTES OF HEALTH  
6011 EXECUTIVE BOULEVARD  
SUITE 325  
ROCKVILLE, MARYLAND 20852-3804

SERIAL NUMBER: 09602212

PATENT NUMBER:

FILING DATE: 06/23/2000

ISSUE DATE:

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& CREW

.011146/0201 PAGE 2

PAULA MCCRAY, EXAMINER  
ASSIGNMENT DIVISION  
OFFICE OF PUBLIC RECORDS

10-16-000

Jocket No. 15280-398100US  
DHHS Ref. No. E-178-99/0

101488536

Department of Commerce  
and Trademark Office

FORM PTO-1595

Recordation

(Rev. 6-93)

(Pat)

To the Honorable Asst. Commissioner for Patents. Please record

1. Name of conveying party(ies):

Ursula Buchholz

9/12/00

Additional name(s) of conveying parties attached? ☐ Yes☒ No.

3. Nature of conveyance:

☐ Assignment ☐ Merger☐ Security Agreement ☐ Change of Name☒ Other: U.S. Public Health Service Agreement

Execution Date(s): November 23, 1999 and September 28, 1999

2. Name and address of receiving party(ies)

Name: The United States Public Health Service, as represented  
by the Office of Technology Transfer, National Institutes  
of Health

Internal Address:

Street Address: 6011 Executive Boulevard, Suite 325

City: Rockville State: Maryland ZIP: 20852-3804

Additional names and addresses attached? ☐ Yes ☒ No

4. Application Number(s) or Patent Numbers.

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No(s): 09/602,212

B. Patent No(s):

Additional numbers attached? ☐ Yes ☒ No5. Name and address of party to whom correspondence  
concerning document should be mailed:Name: Jeffrey J. King  
TOWNSEND AND TOWNSEND AND CREW LLP  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, California 94111-3834  
(206) 467-9600

6. Total number of applications and patents involved 1

7. Total fee (37 CFR 3.41): \$40

☐ Enclosed ☒ Charge Fees to Deposit Account☒ Charge any additional fees associated with this paper or during  
the pendency of this application, or credit any overpayment, to  
deposit account.

8. Deposit account number: 20-1430

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9. Statement and signature.

*To the best of my knowledge and belief, the foregoing is true and correct and any attached copy is a true of copy of the  
original document.*

Jeffrey J. King

Name of Person Signing

Atty Reg. No. 38,515

Signature

9/7/00

Date

Total number of pages including cover sheet, attachments and document 8

10. Change Correspondence Address to that of Part 5?

☒ Yes ☐ No

OMB N . 0651-0011 (exp. 4/94)

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# CONFIDENTIAL

## PUBLIC HEALTH SERVICE

### AGREEMENT

This Agreement is entered into by and between Ursula Buchholz, Ph.D. ("Dr. Buchholz"), having an address at Boddenblick 10, D-17498 Insel Riems, Germany, and the United States Public Health Service (hereinafter referred to as "PHS"), as represented by the Office of Technology Transfer, National Institutes of Health, having an address at 6011 Executive Boulevard, Suite 325, Rockville, Maryland 20852-3804, U.S.A..

#### 1. BACKGROUND

- 1.1 In the course of fundamental research programs at the PHS and at the Federal Research Centre for Virus Diseases of Animals in Germany, Dr. Buchholz, Peter L. Collins, Brian R. Murphy and Stephen S. Whitehead (Inventor(s)) made or reduced to practice certain inventions which are included within the Patent Rights, as defined in Paragraph 2.1 below. Peter L. Collins, Brian R. Murphy and Stephen S. Whitehead are obligated to assign their rights in the Patent Rights to the United States Government. Dr. Buchholz owns her own undivided interest in the Patent Rights.
- 1.2 It is the mutual desire of Dr. Buchholz and the PHS that their respective undivided interests in said Patent Rights be administered in a manner to ensure the rapid commercialization of the Patent Rights and to make their benefits widely available to the public. Therefore, Dr. Buchholz is granting an exclusive license under Dr. Buchholz's rights in the Patent Rights to the PHS under the conditions set forth herein.

#### 2. DEFINITIONS

##### 2.1 "Patent Rights" means:

- a) Patent applications (including provisional patent applications and PCT patent applications) and/or patents as follows: U.S. Patent Application Serial No./U.S. Provisional Patent Application Serial No. 60/143,132, filed July 9, 1999, entitled "Production of Attenuated, Human-Bovine Chimeric Respiratory Syncytial Virus Vaccines", and any patent application(s) claiming the benefit of priority thereof including all divisions and continuations of these applications, all patents issuing from such applications, divisions, and continuations, and any reissues, reexaminations, and extensions of all such patents to the extent that Dr. Buchholz is an Inventor thereon;
- b) to the extent that the following contain one or more claims directed to the invention or inventions disclosed in a) above and to the extent that Dr. Buchholz is an Inventor: i) continuations-in-part of a) above; ii) all divisions and continuations of these continuations-in-part; iii) all patents issuing from such continuations-in-part, divisions, and continuations; iv) priority patent application(s) of a) above; and v) any reissues, reexaminations, and extensions of all such patents;
- c) to the extent that the following contain one or more claims directed to the invention or inventions disclosed in a) above and to the extent that Dr. Buchholz is an Inventor: all counterpart foreign and U.S. patent applications and patents to a) and b) above, including those listed in

## Appendix A.

**Patent Rights** shall *not* include b) or c) above to the extent that they contain one or more claims directed to new matter which is not the subject matter disclosed in a) above.

- 2.2 "Net Revenues" means any and all consideration received by **PHS** from the licensing of said **Patent Rights** pursuant to this Agreement, less fifteen percent (15%) of such consideration for administrative overhead, such administrative overhead shall not exceed Ten Thousand Dollars in total. In the event that a license is executed by **PHS** with a third party wherein said **Patent Rights** are licensed together with other technologies not falling under the definition of **Patent Rights** above, "any and all consideration received by **PHS** from the licensing of said **Patent Rights** pursuant to this Agreement" through such third-party executed license shall correspond to said **Patent Rights**' percentage contribution to the total amount received for all licensed technologies as determined by **PHS**.
- 2.3 "Expenses" means all reasonable and actual out-of-pocket costs incurred by **PHS** for the preparation, filing, prosecution, and licensing of United States and foreign patent applications, extraordinary expenses as provided in Paragraph 4.6, and the maintenance of resulting patents, exclusive of any salaries, administrative, or other indirect costs.
- 2.4 "Recoverable Costs" means One Hundred Percent ( 100%) of **Expenses** incurred by the **PHS** from its management of **Patent Rights** pursuant to this Agreement, excluding costs reimbursed by third parties.

### 3. GRANT AND RESERVATION OF RIGHTS

- 3.1 **Dr. Buchholz** hereby grants and **PHS** accepts, subject to the terms and conditions of this Agreement, an exclusive license including the right to sublicense, under the **Patent Rights** to make and have made, to use and have used, to sell and have sold, to offer to sell, and to import any tangible embodiment of the **Patent Rights** and to practice and have practiced any process(es) included within the **Patent Rights**.
- 3.2 The Government of the United States shall have the irrevocable, royalty-free right worldwide to practice and have practiced the **Patent Rights** for or on behalf of the United States and on behalf of any foreign government or international organization under any existing or future treaty or agreement with the United States.

### 4. PATENT PROSECUTION AND PROTECTION

- 4.1 **PHS** shall file, prosecute, and maintain patent application(s) pertaining to **Patent Rights** and shall promptly provide to **Dr. Buchholz** all serial numbers and filing dates, together with copies of all such applications, including copies of all Patent Office actions, responses, and all other Patent Office communications. In addition, **Dr. Buchholz**, may, at her request, be represented by patent counsel who will be granted Power of Attorney for all such patent applications. **PHS** shall consult with **Dr. Buchholz**, when so requested, prior to communicating with any Patent Office with respect to the **Patent Rights**.
- 4.2 **PHS** shall make an election with respect to foreign filing, upon consultation with **Dr. Buchholz**. If any foreign patent applications are filed, **PHS** shall promptly provide to **Dr. Buchholz** all serial numbers and filing dates. **PHS** also shall provide to **Dr. Buchholz** copies of foreign patent applications and Patent Office actions. **PHS** shall consult with **Dr. Buchholz**, when so requested, prior to communication with any Patent Office with respect to the **Patent**

## **Rights.**

- 4.3 **PHS shall promptly record Assignments of domestic patent rights in the United States Patent and Trademark Office and shall promptly provide Dr. Buchholz with a photocopy of each recorded Assignment(s).**
- 4.4 **Notwithstanding any other provision of this Agreement, PHS shall not abandon the prosecution of any patent application including provisional patent applications (except for purposes of filing continuation application(s)) or the maintenance of any patent contemplated by this Agreement without prior written notice to Dr. Buchholz. Upon receiving such written notice, Dr. Buchholz may, at her sole option and expense, take over the prosecution of any such patent application, or the maintenance of any such patent.**
- 4.5 **PHS shall promptly provide to Dr. Buchholz copies of all issued patents under this Agreement.**
- 4.6 **In the event that PHS anticipates the possibility of any extraordinary expenditures arising from the preparation, filing, prosecution, licensing, or defense of any patent application or patent contemplated by this Agreement, including, without limitation, interferences, reexaminations, reissues and oppositions, PHS shall provide Dr. Buchholz with all relevant information and such extraordinary expenditures shall be included as Expenses only upon written agreement of Dr. Buchholz. PHS and Dr. Buchholz shall agree on a mutually acceptable course of action prior to incurring such expenditures.**

## **5. LICENSING**

- 5.1 **PHS shall diligently seek licensee(s) for the commercial development of said Patent Rights and shall administer the Patent Rights for the mutual benefit of the parties and in the public interest.**
- 5.2 **PHS shall promptly provide to Dr. Buchholz copies of all licenses and sublicenses issued on Patent Rights.**

## **6. ROYALTIES AND EXPENSES**

- 6.1 **PHS shall distribute Net Revenues to Dr. Buchholz concurrently with distributions it makes under PHS's patent policy on the following basis: a) fifty percent (50%) of the Net Revenues to Dr. Buchholz and b) fifty percent (50%) of the Net Revenues as a royalty to PHS. All payments to Dr. Buchholz required under this Agreement shall be in U.S. Dollars and shall be made by check or bank draft drawn on a United States bank and made payable to Ursula Buchholz. All such payments shall be sent to the following address: Boddenblick 10, D-17498 Insel Riems, Germany.**
- 6.2 **PHS shall submit to Dr. Buchholz annual statements of itemized Expenses and will deduct Recoverable Costs prior to the distribution of Net Revenues pursuant to Article 6.1 of this Agreement.**
- 6.3 **Each party shall be solely responsible for calculating and distributing to its respective Inventor(s) of the subject Patent Rights any share of Net Revenues in accordance with its respective patent policy, royalty policy, or Federal law during the term of this Agreement.**

## **7. RECORDS AND REPORTS**

- 7.1 PHS shall keep complete, true, and accurate accounts of all Expenses and of all Net Revenues received by it from each licensee of the Patent Rights and shall permit Dr. Buchholz or Dr. Buchholz's designated agent to examine its books and records in order to verify the payments due or owed under this Agreement.
- 7.2 Upon request by Dr. Buchholz, PHS shall submit to Dr. Buchholz a report setting forth the status of all patent prosecution, commercial development, and licensing activity relating to the Patent Rights for the preceding calendar year.

8. PATENT INFRINGEMENT

- 8.1 In the event PHS or Dr. Buchholz, including its licensees, shall learn of the substantial infringement of any patent subject to this Agreement, the party who learns of the infringement shall promptly notify the other party in writing and shall provide the other party with all available evidence of such infringement. PHS and its licensees, in cooperation with Dr. Buchholz, shall use their best efforts to eliminate such infringement without litigation. If the efforts of the parties are not successful in eliminating the infringement within ninety (90) days after the infringing party has been formally notified of the infringement by PHS, PHS shall have the right, after consulting with Dr. Buchholz, to commence suit on its own account. Dr. Buchholz may commence her own suit after consultation with PHS.
- 8.2 PHS may permit its licensees to bring suit on their own account, and PHS shall retain the right to join any licensee's suit.
- 8.3 Dr. Buchholz shall take no action to compel PHS either to initiate or to join in any suit for patent infringement. Should the Government be made a party to any such suit by motion or any other action of Dr. Buchholz, Dr. Buchholz shall reimburse the Government for any costs, expenses, or fees which the Government incurs as a result of such motion or other action, including any and all costs incurred by PHS in opposing any such joinder action.
- 8.4 Legal action or suits to eliminate infringement and/or recover damages pursuant to Paragraph 8.1 shall be at the full expense of the party by whom suit is brought. All damages recovered thereby shall first be used to reimburse each party for their expenses in connection with such legal action, and the remainder of such damages shall be considered Net Revenues.
- 8.5 Each party agrees to cooperate with the other in litigation proceedings. PHS may be represented at its expense by counsel of its choice in any suit.

9. GOVERNING LAWS, SETTLING DISPUTES

- 9.1 This Agreement shall be construed in accordance with U.S. Federal law, as interpreted and applied by the U.S. Federal courts in the District of Columbia. Federal law and regulations will preempt any conflicting or inconsistent provisions in this Agreement. Dr. Buchholz agrees to be subject to the jurisdiction of U.S. courts.
- 9.2 Any controversy or any disputed claim by either party against the other arising under or related to this Agreement shall be submitted jointly to Dr. Buchholz and to the Director of the National Institutes of Health (NIH) or designee for resolution. Dr. Buchholz and PHS will be free after written decisions are issued by those officials to pursue any and all administrative and/or judicial remedies which may be available.

10. TERM AND TERMINATION

- 10.1 This Agreement is effective when signed by all parties and shall extend to the expiration of the last to expire of the patents included within the Patent Rights unless otherwise terminated by operation of law or by acts of the parties in accordance with the terms of this Agreement.
- 10.2 PHS may terminate this Agreement upon at least sixty (60) days written notice to Dr. Buchholz, but in any event not less than sixty (60) days prior to the date on which any pending Patent Office actions need be taken to preserve patent rights for the benefit of the parties hereto.
- 10.3 Dr. Buchholz may terminate this Agreement in whole or in part if: a) PHS fails to make payments or periodic reports required by this Agreement, after written notice from Dr. Buchholz and a ninety (90) day period for PHS to cure the failure b) PHS has committed a substantial breach of a covenant or duty contained in this Agreement; or c) PHS and Dr. Buchholz are involved in a dispute under this Agreement which cannot be resolved under the procedures specified in Paragraph 9.2. If the Agreement is terminated under this Section 10.3, Dr. Buchholz agrees to provide affected licensees an opportunity to license the Patent Rights under such terms as may have been agreed to by PHS.

## 11. GENERAL

- 11.1 All notices required or permitted by this Agreement shall be given by prepaid, first class, registered or certified mail or by an express/overnight delivery service provided by a commercial carrier, properly addressed to the other Party at the address designated on the following Signature Page, or to such other address as may be designated in writing by such other Party. Notices shall be considered timely if such notices are received on or before the established deadline date or sent on or before the deadline date as verifiable by U.S. Postal Service postmark or dated receipt from a commercial carrier. Parties should request a legibly dated U.S. Postal Service postmark or obtain a dated receipt from a commercial carrier or the U.S. Postal Service. Private metered postmarks shall not be acceptable as proof of timely mailing.
- 11.2 The Agreement or anything related thereto shall not be construed to confer on any person any immunity from or defenses under the antitrust laws or from a charge of patent misuse, and the acquisition and use of rights pursuant to this Agreement shall not be immunized from the operation of state or Federal law by reason of the source of the grant.
- 11.3 It is agreed that no waiver by either party hereto of any breach or default of any of the covenants or agreements herein set forth shall be deemed a waiver as to any subsequent and/or similar breach or default.
- 11.4 This Agreement is binding upon and shall inure to the benefit of the parties hereto, their successors or assigns, but this Agreement may not be assigned by either party without the prior written consent of the other party.
- 11.5 This Agreement confers no license or rights by implication, estoppel, or otherwise under any patent applications or patents of PHS other than Patent Rights regardless of whether such patents are dominant or subordinate to Patent Rights.
- 11.6 Any modification to this Agreement must be in writing and agreed to by both parties.
- 11.7 It is understood and agreed by Dr. Buchholz and PHS that this Agreement constitutes the entire agreement, both written and oral, between the parties, and that all prior agreements respecting the subject matter hereof, either written or oral, expressed or implied, shall be abrogated, canceled, and are null and void and of no effect.

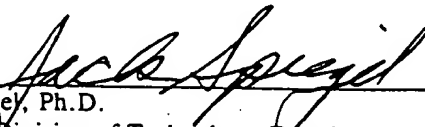
**SIGNATURES BEGIN ON NEXT PAGE**

PHS AGREEMENT

SIGNATURE PAGE

IN WITNESS WHEREOF, the parties hereto have executed this Agreement in duplicate originals by their respective duly authorized officers hereunto, on the day and year hereinafter written. Any communication or notice to be given shall be forwarded to the respective addresses listed below.

For PHS:

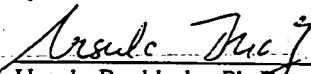
  
\_\_\_\_\_  
Jack Spiegel, Ph.D.  
Director, Division of Technology Development and Transfer  
Office of Technology Transfer  
National Institutes of Health

11/23/99  
Date

Mailing Address for Notices:

Office of Technology Transfer  
National Institutes of Health  
6011 Executive Boulevard, Suite 325  
Rockville, Maryland 20852-3804 U.S.A.

For Dr. Buchholz (Upon information and belief, the undersigned expressly certifies or affirms that the contents of any statements of Dr. Buchholz made or referred to in this Agreement are truthful and accurate.)  
by:

  
\_\_\_\_\_  
Ursula Buchholz, Ph.D.

Sept 28 1999  
Date

Official and Mailing Address for Notices:

Ursula Buchholz, Ph.D.  
Boddenblick 10  
D-17498  
Insel Reims  
Germany

Any false or misleading statements made, presented, or submitted to the Government, including any relevant omissions, under this Agreement and during the course of negotiation of this Agreement are subject to all applicable civil and criminal statutes including Federal statutes 31 U.S.C. §§ 3801-3812 (civil liability) and 18 U.S.C. § 1001 (criminal liability including fine(s) and/or imprisonment).



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UNITED STATES PATENT AND TRADEMARK OFFICE  
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THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 09/12/2000 REEL/FRAME: 011148/0402  
NUMBER OF PAGES: 5

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:  
COLLINS, PETER L. DOC DATE: 08/21/2000

ASSIGNOR:  
MURPHY, BRIAN R. DOC DATE: 08/21/2000

ASSIGNOR:  
WHITEHEAD, STEPHEN S. DOC DATE: 08/21/2000

ASSIGNOR:  
KREMPL, CHRISTINE D. DOC DATE: 08/21/2000

ASSIGNEE:  
GOVERNMENT OF THE UNITED STATES OF  
AMERICA, AS REPRESENTED BY THE  
DEPARTMENT OF HEALTH AND HUMAN  
SERVICES, THE  
6011 EXECUTIVE BOULEVARD, SUITE  
325  
ROCKVILLE, MARYLAND 20852



011148/0402 PAGE 2

SERIAL NUMBER: 09602212  
PATENT NUMBER:

FILING DATE: 06/23/2000  
ISSUE DATE:

ANTIONE ROYALL, EXAMINER  
ASSIGNMENT DIVISION  
OFFICE OF PUBLIC RECORDS

10-16-2000

Attorney Docket No. 15280-398100US  
DHHS Ref. No. E-178-99/0FORM PTO-1595  
(Rev. 6-93)

101488184

U.S. Department of Commerce  
Patent and Trademark Office

To the Honorable Asst. Commissioner for Patents. Please record the attached original documents or copy thereof

## 1. Name of conveying party(ies):

Peter L. Collins  
Brian R. Murphy  
Stephen S. Whitehead  
Christine D. Krempf

9/12/00

Additional name(s) of conveying parties attached? ☐ Yes  
☒ No.Please note that the Agreement of Ursula Buchholz with the  
US Public Health Service is filed under separate cover.

## 3. Nature of conveyance:

- ☒
- Assignment
- ☐
- Merger
- 
- ☐
- Security Agreement
- ☐
- Change of Name
- 
- ☐
- Other:

Execution Date(s): August 21, 2000

## 2. Name and address of receiving party(ies)

Name: THE GOVERNMENT OF THE UNITED STATES OF  
AMERICA, as represented by the Department of Health  
and Human Services

Internal Address:

Street Address: 6011 Executive Boulevard, Suite 325

City: Rockville State: Maryland ZIP: 20852

Additional names and addresses attached? ☐ Yes ☒ No

## 4. Application Number(s) or Patent Numbers.

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No(s): 09/602,212

B. Patent No(s):

Additional numbers attached? ☐ Yes ☒ No5. Name and address of party to whom correspondence  
concerning document should be mailed:Name: Jeffrey J. King  
TOWNSEND AND TOWNSEND AND CREW LLP  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, California 94111-3834  
(206) 467-9600

## 6. Total number of applications and patents involved 1

## 7. Total fee (37 CFR 3.41): \$40

☐ Enclosed ☒ Charge Fees to Deposit Account☒ Charge any additional fees associated with this paper or during  
the pendency of this application, or credit any overpayment, to  
deposit account.

8. Deposit account number: 20-1430

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## 9. Statement and signature.

To the best of my knowledge and belief, the foregoing is true and correct and any attached copy is a true of copy of the  
original document.Jeffrey J. King  
Name of Person Signing

Signature

Date

Atty Reg. No. 38,515

Total number of pages including cover sheet, attachments and document 5

10. Change Correspondence Address to that of Part 5? ☒ Yes ☐ No

OMB No. 0651-0011 (exp. 4/94)

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Mail documents to be recorded with required cover to:

10/13/2000 DBYRNE 00000141 201430 09602212

01 FC:581 40.00 CH

Asst. Commissioner for Patents  
Box: Assignments  
Washington, D.C. 20231

ASSIGNMENT

JOINT

WHEREAS, We, Ursula Buchholz, of Boddenblick 10, D-17498 Insel Riems, Germany, Peter L. Collins, of 12304 Village Square, Apt. 401, Rockville, MD 20852, Brian R. Murphy, of 5410 Tuscarawas Road, Bethesda, MD 20816, Stephen S. Whitehead, of 7 Prairie Rose Lane, Gaithersburg, MD 20878, Christine D. Krempf, of 12512 Village Square Terrace, Apt. 102, Rockville, MD 20852, hereinafter referred to as "Assignors," employees of the Department of Health and Human Services at the time the invention was made, have invented: PRODUCTION OF ATTENUATED, HUMAN-BOVINE CHIMERIC RESPIRATORY SYNCYTIAL VIRUS VACCINES, for which an application to the Assistant Commissioner for Patents for grant of Letters Patents of the United States of America has been executed by the undersigned

☒ is identified as U.S. Patent Application:  
Serial No. 09/602,212

Filed June 23, 2000; and

WHEREAS, the conditions under which said invention was made are such as to entitle the Government of the United States of America under Paragraph 1(a) of Executive Order 10096, to the entire right, title, and interest herein, both domestic and foreign; and

WHEREAS, the Government of the United States of America is desirous of acquiring all domestic and foreign right, title, and interest in the aforesaid invention described in the aforesaid application for Letters Patent of the United States of America; and

NOW, THEREFORE, to all whom it may concern, be it known that for and in consideration of the premises and other valuable considerations, we the undersigned, have sold, assigned, and transferred and by these presents do sell, assign, and transfer unto The Government of the United States of America as represented by the Secretary of the Department of Health and Human Services (hereinafter THE GOVERNMENT), and his successors, the full and exclusive right, title, and interest throughout the United States of America, its territories and dependencies, and within each and every foreign country in which THE GOVERNMENT elects to file the invention described in the aforesaid application for Letters Patent of the United States of America, and all Letters Patents and Registrations which may be granted on the same in the United States of America and all countries throughout the world, and to claim the priority from the application as provided by the Paris Convention, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof.

AND, we hereby authorize and request the Assistant Commissioner for Patents to issue said Letters Patent to THE GOVERNMENT as assignee of the entire right, title, and interest in and to the same throughout the United States of America, its territories and dependencies, and within each and every foreign country in which THE GOVERNMENT elects to file, for the sole use for the full term or terms for which said Letters Patent and Registrations may be granted thereon, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof which may be granted as fully and entirely as the same would have been held by us, had this assignment not been made;

AND, we hereby warrant that there are no outstanding assignments, grants, liens, encumbrances, or agreements either written, oral, or implied with respect to the aforesaid application for Letters Patent which will impair, diminish, limit, or abridge the interest herein conveyed at the time of the execution of this instrument by us;

AND, we hereby agree to execute any and all applications for Letters Patent in the United States of America and foreign countries, and to furnish and deliver to the Secretary, Department of Health and Human Services, upon request, all data and documents, and to execute any papers which may be necessary for the prosecution of any application or applications of Letters Patent or for THE GOVERNMENT to exercise its rights granted hereunder, including communicating to THE GOVERNMENT, its representatives or agents, any facts relating to said invention, including evidence for interference purposes, or for other proceedings, whenever requested, to testify in any interference or other proceedings, whenever requested, and to execute and deliver on request all lawful papers required to make any of the foregoing provisions effective, and likewise make these provisions binding upon our heirs, legal representatives, administrators and assigns, and we shall assist THE GOVERNMENT in every way as may be requested in protecting said invention, provided that any expense of extending such assistance shall be paid by THE GOVERNMENT.

The undersigned hereby grants THE GOVERNMENT or the law firm of Townsend and Townsend and Crew LLP, the power to insert on this Assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN TESTIMONY WHEREOF, Assignors have signed their names on the dates indicated.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Ursula Buchholz

WITNESSED by:

\_\_\_\_\_  
Date: \_\_\_\_\_

\_\_\_\_\_  
Date: \_\_\_\_\_

Dated: 8/21/00

Peter L. Collins  
Peter L. Collins

STATE OF MARYLAND )

COUNTY OF MONTGOMERY )

ss.

UNITED STATES OF AMERICA

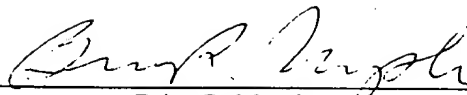
On August 21, 2000, before me, Almaz Tulseged (name of notary public), personally appeared Peter L. Collins, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Almaz Tulseged  
NOTARY PUBLIC  
My Commission Expires: \_\_\_\_\_

ALMAZ TULSEGED  
NOTARY PUBLIC STATE OF MARYLAND  
My Commission Expires March 5, 2002

Dated: 8/21/00

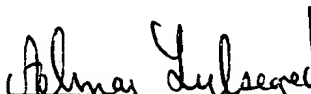
  
Brian R. Murphy

STATE OF MARYLAND )  
COUNTY OF MONTGOMERY ) ss.

UNITED STATES OF AMERICA

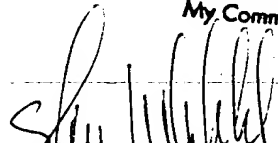
On August 21, 2000, before me, Almaz Iulseged (name of notary public), personally appeared Brian R. Murphy, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

  
NOTARY PUBLIC  
My Commission Expires: \_\_\_\_\_

ALMAZ IULSEGED  
NOTARY PUBLIC STATE OF MARYLAND  
My Commission Expires March 5, 2002

Dated: 8/21/00

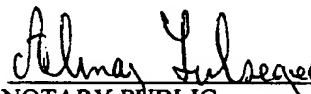
  
Stephen S. Whitehead

STATE OF MARYLAND )  
COUNTY OF MONTGOMERY ) ss.

UNITED STATES OF AMERICA

On August 21, 2000, before me, Almaz Iulseged (name of notary public), personally appeared Stephen S. Whitehead, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

  
NOTARY PUBLIC  
My Commission Expires: \_\_\_\_\_

ALMAZ IULSEGED  
NOTARY PUBLIC STATE OF MARYLAND  
My Commission Expires March 5, 2002

Dated: 8/21/00

Christine D. Krempf  
Christine D. Krempf

STATE OF MARYLAND       )  
                                      )  
COUNTY OF MONTGOMERY    )       ss.

UNITED STATES OF AMERICA

On August 21, 2000, before me, Almaz Tulseged (name of notary public), personally appeared Christine D. Krempf, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Almaz Tulseged  
NOTARY PUBLIC  
My Commission Expires: \_\_\_\_\_

**ALMAZ TULSEGED**  
**NOTARY PUBLIC STATE OF MARYLAND**  
**My Commission Expires March 5, 2002**